

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: S.J. Crampton Attorney Docket No.: BRSF119831

Title: SCANNING APPARATUS AND METHOD

REMARKS FOR CONTINUATION APPLICATION

Seattle, Washington 98101

June 20, 2003

TO THE COMMISSIONER FOR PATENTS:

REMARKS

This continuation application includes claims corresponding to Claims 80-123, 125-141, and 152-159 that were previously canceled from the parent application, Application No. 09/000,215. These claims are reinstated as new claims in the present application and referenced as Claims 1-66. The concordance between the claims in the continuation application and the claims canceled from the parent application is set out in APPENDIX A of this document. This continuation application also includes new Claims 67-82. To assist the Examiner, the following remarks, which are in support of the patentability of the present application, refer to the claim numbers of the parent application.

Allowability of the Claims Corresponding to Claims 80-123, 125-141, and 152-159

In the Office Action mailed July 31, 2002, Claims 80-83, 85-97, 99-104, 106-117, 119-123, 125-132, 134-141, and 152-159 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schulz (U.S. Patent No. 5,198,877) in view of Quick et al. (U.S. Patent No. 5,191,642), and further in view of Mauldin (U.S. Patent No. 5,886,703).

The Examiner's arguments set out in the Office Action concerning the relationship between the features of the claims and the disclosure in Schulz and Quick et al. are the same as the arguments presented in previous Office Actions.

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The arguments in the Office Action of July 31, 2002, which are new, are as follows:

- (a) the arguments in the final two paragraphs on page 5 concerning the relationship between the claimed features and the disclosure in Mauldin; and
- (b) the arguments in part 6 of the Office Action rejecting our previous arguments concerning Claims 136 and 137.

These new arguments in the Office Action will now be considered in turn.

Mauldin

The Office Action acknowledges that the combination of Schulz and Quick et al. does not explicitly teach the features of aligning and rendering polygon meshes.

However, the Office Action alleges that such features are taught by Mauldin in Col. 1, lines 24-26 and 35-36, and Col. 11, lines 60-65.

However, this is incorrect for at least the reasons explained below.

Referring to Claim 80 by way of example (which is Claim 1 in the continuation application), the claim recites that the display processor is operable to:

process the data from the scanner and the position detector to generate a plurality of polygon meshes, each respective mesh containing points in three-dimensional space representing points on the surface of the object;

align the polygon meshes in dependence upon a plurality of points in different respective meshes; and

render the aligned polygon meshes to generate the rendered polygon image data.

Mauldin is concerned with perspective correct texture mapping of polygons. Mauldin is totally silent about the generation of a plurality of polygon meshes, each respective mesh containing points in three-dimensional space representing points on the surface of an object. Mauldin is also totally silent about aligning polygon meshes. Further, Mauldin is totally silent

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about aligning polygon meshes in dependence upon a plurality of points in different respective meshes. Yet further, Mauldin is totally silent about rendering aligned polygon meshes.

Col. 1, lines 24-26 and 35-36 in Mauldin, to which the Office Action refers, merely disclose the texture mapping of polygons with digitised versions of actual pictures during rendering. This has nothing whatsoever to do with the claimed subject matter. Col. 11, lines 60-65, to which the Office Action refers, discusses a special case that occurs "when the polygon is aligned with one axis of the viewer's coordinate system". It is immediately apparent to anyone reading this that the alignment referred to at Col. 11, lines 60-65 is the alignment of a single polygon with an axis of a coordinate system. There is simply no teaching whatsoever of alignment of a plurality of polygon meshes and there is also no teaching whatsoever of alignment in dependence upon a plurality of points in different respective meshes.

A thorough review of the rest of Mauldin shows that nowhere is there any disclosure or hint of the features from Claim 80 recited above.

Accordingly, for at least the reasons above, it is submitted that Claim 80 and the other corresponding independent claims are patentable over the documents cited by the Examiner.

Claims 136 and 137

It is immediately evident from the comments in part 6 of the Office Action that the Examiner's technical understanding of Schulz is incorrect.

Referring to Figures 1, 2, and 3 of Schulz, together with the disclosure at Col. 5, line 54, to Col. 6, line 47, and Col. 7, lines 4-6, Schulz discloses:

- (1) a helium-neon laser 56 to generate a scanning beam 42
- (2) one-dimensional spot sensors or detectors 16, 18 for detecting the reflected light 43 (that is the light from the helium-neon laser after reflection from the surface 40 of object 38)
- (3) three pilot light emitters 20, 22, and 24

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- (4) three remotely located, one-dimensional pilot light sensors 26, 28, and 30 to sense light projected by the individual pilot light emitters 20, 22, and 24 and to generate electrical output signals from which are derived the location of the scanning head 12.

Accordingly, the argument in the Office Action that the emitters 20, 22, and 24 of Figure 3 constitute a laser, and that detectors 16 and 18 of FIGURE 3 constitute detectors for detecting illumination light from emitters 20, 22, and 24 is simply incorrect.

As explained previously, in Schulz, the specific purpose of detectors 16 and 18 is to detect laser light reflected from the surface of the object, and the specific purpose of the pilot light sensors 26, 28, and 30 is to sense light projected by the pilot light emitters 20, 22, and 24, and to generate electrical output signals from which to derive the location of the scanning head 12. This purpose is totally unrelated to the generation of texture data. In fact, Schulz does not disclose or suggest a single feature recited in Claim 136 or claim 137 for producing texture data.

For example, it is immediately evident from a comparison of the features recited in Claim 136 and the disclosure in Schulz, that Schulz does not teach or suggest a single one of the following features for producing texture data for rendering on to a 3D computer model, as recited in claim 136:

- (i) A light source arranged to emit illumination light onto the object surface (this being an additional light source to the laser for generating the three-dimensional computer model);
- (ii) A detector to detect illumination light reflected from the object surface (contrary to the pilot sensors 26, 28 and 30 in Schulz whose specific purpose is to detect light directly from the pilot light emitters 20, 22 and 24 - not reflected light);
- (iii) The light source is arranged to substantially surround the detector which detects the illumination light;
- (iv) The laser, the detector which detects the laser light, the light source and the detector which detects the illumination light are provided in a single housing which can be guided by the operator to scan the object (in

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Schultz, the pilot light sensors 26, 28 and 30 and not within scanning head 12);

(v) A processor for processing signals from the detector which detects the illumination light to produce the texture data (no texture data is produced in Schultz). (Emphasis added.)

Accordingly, for at least the reasons above, we submit that the features of independent Claims 136 and 137 are both novel and inventive over the documents cited by the Examiner.

New Claims 67-82 in this Continuation Application

Claims 67-82 in this continuation application have no counterpart in the parent patent application, Application No. 09/000,215.

However, a thorough review of the prior art of record has not revealed any disclosure which might teach or suggest the features recited in the claims.

CONCLUSION

In view of the foregoing remarks, it is submitted that the present application is now in condition for allowance. Consideration and examination of the application and allowance of the claims are solicited. If the Examiner has any questions or comments concerning this matter, the Examiner is invited to contact applicant's undersigned attorney at the number below.

Respectfully submitted,

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APPENDIX A

5244651

<u>CONTINUATION APPLICATION CLAIM NUMBER</u>	<u>CLAIM CONCORDANCE</u>	<u>APPLICATION 09/000,215 CLAIM NUMBER</u>
1		80
2		81
3		82
4		83
5		84
6		85
7		86
8		87
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34	113
35	121
36	122
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47	127
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62	141
63	152
64	153
65	154
66	155
67	No corresponding claim
68	No corresponding claim
69	No corresponding claim
70	No corresponding claim
71	No corresponding claim
72	No corresponding claim
73	No corresponding claim
74	No corresponding claim

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75 No corresponding claim

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CLAIM CONCORDANCE

CONTINUATION
APPLICATION
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76	No corresponding claim
77	No corresponding claim
78	No corresponding claim
79	No corresponding claim
80	No corresponding claim
81	No corresponding claim
82	No corresponding claim